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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/817,093	03/26/2001	Fumio Takao	01178/LH	7731

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EXAMINER

CUEVAS, PEDRO J

ART UNIT

PAPER NUMBER

2834

DATE MAILED: 03/14/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/817,093

Applicant(s)

TAKAO ET AL.

Examiner

Pedro J. Cuevas

Art Unit

2834

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 March 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 4 and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,818,482 to Ohta et al.

Ohta et al. clearly teaches the construction of a multilayer piezoelectric actuator device

(1) comprising:

a laminated structure including a plurality of piezoelectric elements (4) and a plurality of internal electrodes (22 and 23) alternately stacked; and

a pair of external electrodes (25) connected alternately to said internal electrodes, each of said external electrodes comprising:

an electrode layer formed on a first side surface of said laminated

structure; and

a first composite layer (6) formed on said electrode layer and made of a conductive resin including a first conductive material.

3. With regards to claim 4, Ohta et al. discloses a multilayer piezoelectric actuator device comprising:

a carbon paper (5),

said carbon paper being placed on said first composite layer,

said electrode layer and said carbon paper being adhered to each other by
said first composite layer as shown in Figure 2.

4. With regards to claim 9, Ohta et al. discloses a multilayer piezoelectric actuator device wherein said first conductive material comprises at least one kind of material selected from Ag, Au, Pt, Pd, Cu, Ni, and C, in this particular case C as described in column 7, lines 55-60.

5. Claims 5-7 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 6,316,865 to Riedel.

Riedel clearly teaches the construction of multilayer piezoelectric actuator device (1) comprising:

a laminated structure including a plurality of piezoelectric elements (3 and 4) and
a plurality of internal electrodes (7) alternately stacked; and

a pair of external electrodes (13 and 13) connected alternately to said internal
electrodes, each of said external electrodes comprising:

an electrode layer formed on a first side surface of said laminated
structure; and

a first composite layer formed on said electrode layer and made of a
conductive resin including a first conductive material,

said multilayer piezoelectric actuator device further comprising a second
composite layer (9) formed on said first composite layer,

said second composite layer being made of a conductive resin including a second
conductive material and a carbon fiber.

Art Unit: 2834

6. With regards to claim 6, Riedel discloses a multilayer piezoelectric actuator device wherein said electrode layer and said second composite layer are adhered to each other by said first composite layer as shown in Figure 1.

7. With regards to claim 7, Riedel discloses a multilayer piezoelectric actuator device wherein said second conductive material comprises at least one kind of material selected from Ag, Au, Pt, Pd, Cu, Ni, and C, in this particular case C as described in column 6, lines 11-17.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 8 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over either U.S. Patent No. 5,818,482 to Ohta et al. (claim 10) or U.S. Patent No. 6,316,865 to Riedel (claim 8) in view of U.S. Patent No. 5,406,164 to Okawa et al.

Riedel discloses the construction of multilayer piezoelectric actuator device as described above.

Ohta et al. discloses the construction of multilayer piezoelectric actuator device as described above.

However, both fail to disclose a multilayer piezoelectric actuator device wherein said second conductive material has at least one kind of shape selected from a granular shape, a needle-like shape, and a fiber-like shape.

Art Unit: 2834

Okawa et al. teaches the construction of one layer of a multilayer piezoelectric element with a conductive material having a granular shape as shown in Figure 3, for the purpose of providing a conductive path for the first layer (13a) of the conductive portions.

It would have been obvious to one skilled in the art at the time the invention was made to use the granular shape conductive material disclosed by Okawa et al. on the multilayer piezoelectric actuator device disclosed by Riedel or Ohta et al. for the purpose of providing a conductive path for the first layer (13a) of the conductive portions.

10. Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,818,482 to Ohta et al. in view of common knowledge in the art.

Ohta et al. discloses the construction of multilayer piezoelectric actuator device as described above.

However, both fail to disclose a multilayer piezoelectric actuator device wherein:

said electrode layer is formed on the side surface of said laminated structure by one selected from firing, plating, and sputtering; and

said first composite layer is adhered to said electrode layer by thermosetting.

The method of forming the device is not germane to the issue of patentability of the device itself. Therefore, this limitation has not been given patentable weight.

11. With regards to claims 7 and 9, it would have been obvious to one having ordinary skill in the art at the time the invention was made to select any one material from Ag, Au, Pt, Pd, Cu, Ni, and C for the construction of the second conductive material, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its

Art Unit: 2834

suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

Conclusion

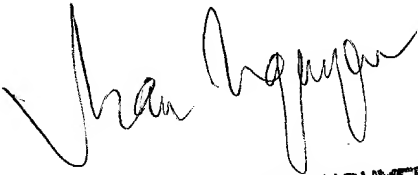
12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See PTO-892.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pedro J. Cuevas whose telephone number is (703) 308-4904. The examiner can normally be reached on M-F from 8:30 - 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Néstor R. Ramírez can be reached on (703) 308-1371. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-1341 for regular communications and (703) 305-3432 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Pedro J. Cuevas
March 11, 2002


TRAN NGUYEN
PRIMARY EXAMINER